

Unmanned Underwater Vehicle Showcase

The eighth Unmanned Underwater Vehicle Showcase took place at the National Oceanography Centre, Southampton, from 27th to 28th September 2006. Although modest in size compared, for example, to OI-London, the UUVS attracted many interested in AUVs, ROVs and related industry.

Conference

The UUVS is more or less conference driven. Some forty exhibitors, 78 registered delegates and 550 registered visitors attended. Conference provided an update on progress in the rapid developments in this field. All twenty papers were invited by the organising committee, which had a great influence on quality and theme. Subjects highlighted developments in the commercial use of vehicles, as in the oil & gas sector, while attention was also paid to military and scientific applications. Experts from the USA, UK and France presented papers. High levels of delegate attendance often left standing room only, an indication of the amount of interest in papers.

Delegates approved the conference programme, formulated by a committee of experts drawn from the UUV industry and academia and chaired by Ian Ball. Presentations with question time, exhibition stands, the breaks and the very well-attended conference dinner in the Southampton football stadium offered ample opportunity for discussion and exchange of views on the problems, progress and opportunities surrounding UUVs.

The keynote speech by Graham Openshaw gave an interesting overview of UUVs in the O&G industry. This is an industry lacking any great drive towards risk-taking and where the ROV is considered to be a mature technology whilst the AUV still has to earn its place, making the move from technological toy to viable commercial tool. On the second day of conference the keynote speech went into the complex case of (limited) liability of UUV operators under maritime law.

Commercially orientated papers gave inside information on the use of AUVs in the offshore industry. Under review here was not so much the "traditional" role of the AUV in bringing sensors close to the seabed for accurate and efficient surveying according to a pre-programmed path, but more specifically projects concerning investigation of the role of AUVs in inspection and intervention. These activities imply the importance of hovering for the AUV industry. The papers included the experience with deep ROVs and AUVs of bodies such as NSRS, IFREMER and WHOI. Other papers presented the results of trials including the ALISTAR 3000 pipe and structure inspection trials and BP 2006 AUV and ROV trial work.

The present state of AUV-based intervention technology is proving to be a new and efficient way of working, and one that has extra potential in new areas of exploitation such as deepwater and marginal fields. Attention must be paid to matching project needs to technical solutions: the business case for AUVs. AUVs are expensive tools and as technology evolves and new sensors become available these vehicles must be capable of having new techniques and sensors integrated during any upgrade programme. While both ROV and AUV techniques can learn from each other.

The military orientated papers clearly showed the military value of UUVs, ranging from ROVs to AUVs and HAUVs (Hovering AUVs), and there is already impressive use of them in various capacities. They are used not only in covert operations and rapid environmental assessment but also for such activities as hydrographic and MCM and harbour and port-security operations. These include inspection in confined and geometrically complex volumes of water such as under and around pier and piling structures, as well as ships' hulls. The military are allocating increasing budgets to UUV development and although military requirements are not the same as commercial and scientific requirements, an extra boost from the R&D is beneficial for the industry.

A student competition to design, build and perform realistic missions in an underwater environment was held in August 2006 for the first time in Europe. This was similar to the event that has been held for eight years already in the US. A presentation showing the success of this competition mentioned not only the benefits of bringing a new generation of engineers to the UUVS industry, but also asked for more involvement via sponsorship from this same industry for future competitions. Underwater technology is expensive and only teams with decent support will succeed.

Technology orientated papers focused on communication and, power aspects. In terms of communication, the (military) demonstrated the need to integrate sensors with communication and processing of data to deliver better situational awareness. The crucial importance of power for AUVs yielded interesting papers on energy storage and future power systems. It signalled how the power situation was improving but a lot more work still had to be done.

Conference proceedings can be ordered from Spearhead Exhibitions at www.uuvs.net for the price of £35 (equivalent: US\$ 74.44) plus VAT and postage.

Exhibition

Exhibitors were generally very positive about this event, referring to having won new contracts. There seemed to be general agreement that quality told above visitor numbers. The exhibition was held in the SOC buildings around the conference room. Quite a lot of UUVs were displayed, ranging from small ROVs like the Seaeye Falcon, the Remus AUV, now developed for use as deep as 6,000 metres, to the Survey Autonomous Semi-Submersible (SASS) from ASV Ltd. Also present were manufacturers of software and hardware for use in the UUV industry, such as various sonar, subsea inertial navigation and underwater communication systems and connectors for sensors.

What's New

Whilst there was no obviously world-altering new invention on display, many small steps could be noted in evolutionary processes. The reduction in size of systems is one example that enables full potential for small UUVs; included here is the Tritech Micron family (sonar, gyro, and laser optometrics). Other examples include variable buoyancy systems like the one from Oceanlab, or the various 3D-visualisation software packages. As for new inventions, Wireless Fibre Systems Ltd took the opportunity of the UUVS to launch its S1510 underwater radio modem, able to transmit data from underwater to above the surface.

The UUVS is located next to the Empress dock, which offers opportunities for demonstrations with waterborne equipment, a chance grasped by some manufacturers. Will we see more manufacturers follow this example at the next UUVS?

As with former editions of the event, I missed attention for UUV driving instruction, perhaps due to the fact that most are simply the generation following on prototyping.

Next Year

The UUVS, bringing together as it does practical users, industrial designers, the military and scientists, shows how UUVs have grown into a business serving the commercial, military and scientific worlds. The ninth UUVS will be held at the Southampton Oceanography Centre on 26th and 27th September 2007. Many exhibitors have already booked their stand.

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